# UNITED STATES DEPARTMENT OF AGRICULTURE
# NATURAL RESOURCES CONSERVATION SERVICE

# ECOLOGICAL SITE DESCRIPTION

## ECOLOGICAL SITE CHARACTERISTICS

**Site Type**: Rangeland

**Site ID**: R070XD154NM

**Site Name**: Swale

**Precipitation or Climate Zone**: 13 to 18 inches

**Phase**:

## PHYSIOGRAPHIC FEATURES

**Narrative**:

This site occurs in concave or depressional positions of valleys along drainageways or as sinkholes. This site receives significant runoff from adjacent sites to increase the effective moisture. This site transports water from higher, upland sites to lower, bottomland sites. Slopes vary from 0 to 4 percent. Direction of slope varies and is not significant. Elevations range from 4,000 to 7,000 feet above sea level.

**Land Form:**

1. Depression
2. Valley floor
3.

**Aspect:**

1. N/A
2.
3.

| | Minimum | Maximum |
|---|---|---|
| **Elevation (feet)** | 4,000 | 7,000 |
| **Slope (percent)** | 0 | 4 |
| **Water Table Depth (inches)** | N/A | N/A |

| **Flooding:** | **Minimum** | **Maximum** |
|---|---|---|
| **Frequency** | N/A | N/A |
| **Duration** | N/A | N/A |

| **Ponding:** | **Minimum** | **Maximum** |
|---|---|---|
| **Depth (inches)** | N/A | N/A |
| **Frequency** | N/A | N/A |
| **Duration** | N/A | N/A |

**Runoff Class**:

Negligible to medium.

## CLIMATIC FEATURES

**Narrative**:

The climate of this area is "semi-arid continental."

Average annual precipitation ranges from 13 to 18 inches. Variations of 5 inches, more or less, are not uncommon. Approximately 70 percent of this occur from May through October. Most of the summer rain comes in the form of high-intensity, short-duration thunderstorms. Winter moisture is usually negligible.

Distinct seasonal changes and large annual diurnal temperature changes characterize temperatures. The average annual temperature ranges from 55 degrees F to 60 degrees F, with extremes of 20 degrees F below zero in the winter to 110 degrees F in the summer not uncommon.

The average frost-free season is 180 to 200 days, the last killing frost being in early April and the first killing frost being in mid October.

Both temperatures and precipitation on this site favor a warm-season perennial plant community. However, because of the position of this site, water and cold air drainage, conditions are good for an important cool-season component on this site. Winds that blow from the west and southwest from February through June tend to dry the soil during a critical period for cool-season plant growth.

Climate data was obtained from http://www.wrcc.sage.dri.edu/summary/climsmnm.html web site using 50% probability for freeze-free and frost-free seasons using 28.5 degrees F and 32.5 degrees F respectively.

| | Minimum | Maximum |
|---|---|---|
| **Frost-free period (days)**: | 160 | 191 |
| **Freeze-free period (days)**: | 180 | 221 |
| **Mean annual precipitation (inches)**: | 13 | 18 |

**Monthly moisture (inches) and temperature ($^0$F) distribution:**

| | Precip. Min. | Precip. Max. | Temp. Min. | Temp. Max. |
|---|---|---|---|---|
| January | .47 | .56 | 21.4 | 56.6 |
| February | .50 | .54 | 23.8 | 62.1 |
| March | .49 | .57 | 28.5 | 68.5 |
| April | .54 | .60 | 35.0 | 76.7 |
| May | 1.13 | 1.44 | 43.2 | 83.5 |
| June | 1.78 | 1.84 | 51.6 | 92.2 |
| July | 1.87 | 2.98 | 55.7 | 92.1 |
| August | 2.29 | 3.26 | 54.2 | 90.3 |
| September | 2.67 | 2.80 | 48.2 | 84.3 |
| October | 1.24 | 1.40 | 37.6 | 76.7 |
| November | .53 | .55 | 27.5 | 65.5 |
| December | .60 | .68 | 21.6 | 57.8 |

**Climate Stations**:

| | | | | Period | | |
|---|---|---|---|---|---|---|
| Station ID | 292865 | Location | Elk 2E | From: 6/1/1895 | To: | 12/31/00 |
| Station ID | 294112 | Location | Hope | From: 03/01/19 | To: | 12/31/00 |

## INFLUENCING WATER FEATURES

**Narrative**:

This site is not influenced by water from a wetland or stream.

**Wetland description:**

| System | Subsystem | Class |
|---|---|---|
| N/A | | |

**If Riverine Wetland System enter Rosgen Stream Type**:

N/A

## REPRESENTATIVE SOIL FEATURES

**Narrative**:

The soils on this site are deep and well drained. The surface textures are loam, very fine sandy loam, silt loam, and silty clay loam. Subsurface textures are silt loam and silty clay loam. Permeability is moderate to slow and water-holding capacity is high. The effective rooting depth is 60 inches or more. These soils, once wetted, can store water for relatively long periods. Soil blowing hazard is moderate and water erosion hazard could be severe. Organic matter in the surface soil is significant for this area.

**Parent Material Kind**: Alluvium
**Parent Material Origin**: Mixed

**Surface Texture:**

1. Silty loam
2. Gravelly loam
3. Cobbly loam
4. Loam
5. Fine sandy loam
6. Silty clay loam
7. Very fine sandy loam

**Surface Texture Modifier:**

1. Gravel
2.
3.

**Subsurface Texture Group:** Loamy
**Surface Fragments <=3" (% Cover):** 15 to 35
**Surface Fragments >3" (% Cover)**: N/A

**Subsurface Fragments <=3" (%Volume)**: 15 to 35
**Subsurface Fragments >=3" (%Volume)**: N/A

| | Minimum | Maximum |
|---|---|---|
| **Drainage Class**: | Well | Well |
| **Permeability Class**: | Very slow | Moderate |
| **Depth (inches)**: | 60 | >72 |
| **Electrical Conductivity (mmhos/cm)**: | N/A | N/A |
| **Sodium Absorption Ratio**: | N/A | N/A |
| **Soil Reaction (1:1 Water)**: | 6.6 | 7.8 |
| **Soil Reaction (0.1M CaCl2)**: | N/A | N/A |
| **Available Water Capacity (inches)**: | 9 | 12 |
| **Calcium Carbonate Equivalent (percent)**: | N/A | N/A |

## PLANT COMMUNITIES

**Ecological Dynamics of the Site**:

**Plant Communities and Transitional Pathways (diagram)**

**Plant Community Name**: Historic Climax Plant Community (lower elevation)

**Plant Community Sequence Number**: 1 **Narrative Label**: HCPC

**Plant Community Narrative**: Historic Climax Plant Community
The aspect of this site is that of a grassland. Because of the extra water, the plant community stands out due to increased production. It is dominated by mid and tall grasses. Grass species sometimes occur in colonies. Shrubs are scattered throughout this site. Forb production varies from year to year and season to season, but is seldom a large component in this site. Production and composition vary greatly with elevation.

| | |
|---|---|
| Canopy Cover: | |
| Trees and shrubs | 2 % |
| Ground Cover (Aveage Percent of Surface Area). | |
| Grasses & Forbs | 34 – 42 |
| Bare ground | 8 – 12 |
| Surface cobble and stone | 3 |
| Litter (percent) | 30 |
| Litter (average depth in cm.) | 5 |

**Plant Community Annual Production (by plant type)**: Lower elevation

**Annual Production (lbs/ac)**

| Plant Type | Low | RV | High |
|---|---|---|---|
| **Grass/Grasslike** | 936 | 1,248 | 1,560 |
| **Forb** | 36 | 48 | 60 |
| **Tree/Shrub/Vine** | 96 | 128 | 160 |
| **Lichen** | | | |
| **Moss** | | | |
| **Microbiotic Crusts** | | | |
| **Total** | 1,200 | 1,600 | 2,000 |

**Plant Community Composition and Group Annual Production**:

**Plant Type - Grass/Grasslike**

| Group Number | Scientific Plant Symbol | Common Name | Species Annual Production | Group Annual Production |
|---|---|---|---|---|
| 1 | BOGR | Blue Grama | 80 – 560 | 80 – 560 |
| 2 | BOCU | Sideoats Grama | 160 – 320 | 160 – 320 |
| 3 | PLMU3 | Tobosa (lower elevations only) | 320 – 480 | 320 – 480 |
| 4 | PASM | Western Wheatgrass | 160 – 320 | 160 – 320 |
| 5 | PAOB | Vine-mesquite | 160 – 320 | 160 – 320 |
| 6 | BOSA<br>BOBA3 | Silver Bluestem<br>Cane Bluestem | 80 – 240 | 80 – 240 |
| 7 | SPAI<br>SPWR2 | Alkali Sacaton<br>Giant Sacaton | 160 – 240 | 160 – 240 |
| 8 | ARIST | Threeawn spp. | 48 – 80 | 48 – 80 |
| 9 | SPORO | Dropseed spp. | 48 – 80 | 48 – 80 |
| 10 | PAHA | Hall's Panicum | 80 – 160 | 80 – 160 |
| 11 | SCBR2<br>MURI | Burrograss(lower elevations only)<br>Mat Muhly | 48 – 80 | 48 – 80 |
| 12 | 2GRAM | Other Grasses | 48 – 80 | 48 - 80 |

**Plant Type - Forb**

| Group Number | Scientific Plant Symbol | Common Name | Species Annual Production | Group Annual Production |
|---|---|---|---|---|
| 13 | ERIOG | Wildbuckwheat | 16 – 32 | 16 – 32 |
| 14 | ARTEM | Sagewort spp. | 16 – 48 | 16 – 48 |
| 15 | VEPO4 | Verbena | 16 – 32 | 16 – 32 |
| 16 | 2FORB | Other Forbs | 16 – 48 | 16 - 48 |

**Plant Type – Tree/Shrub/Vine**

| Group Number | Scientific Plant Symbol | Common Name | Species Annual Production | Group Annual Production |
|---|---|---|---|---|
| 17 | ATCA2 | Fourwing Saltbush | 48 – 80 | 48 – 80 |
| 18 | ACGR | Catclaw Acacia | 48 – 80 | 48 – 80 |
| 19 | PAPA | Apacheplume | 80 – 128 | 80 – 128 |
| 20 | YUCCA | Yucca spp. | 48 – 80 | 48 – 80 |
| 21 | 2SD | Other Shrubs | 48 – 80 | 48 - 80 |

**Plant Type - Lichen**

| Group Number | Scientific Plant Symbol | Common Name | Species Annual Production | Group Annual Production |
|---|---|---|---|---|
| | | | | |
| | | | | |

**Plant Type - Moss**

| Group Number | Scientific Plant Symbol | Common Name | Species Annual Production | Group Annual Production |
|---|---|---|---|---|
| | | | | |
| | | | | |

**Plant Type - Microbiotic Crusts**

| Group Number | Scientific Plant Symbol | Common Name | Species Annual Production | Group Annual Production |
|---|---|---|---|---|
| | | | | |
| | | | | |

Other grasses, which would appear on this site, include: plains bristlegrass, green sprangletop, big bluestem, Indiangrass, switchgrass, Canadian wildrye, plains lovegrass, bottlebrush squirreltail, and wolftail.
Other shrubs include: broom baccharis, desert willow, winterfat, tarbush, broom snakeweed, sumac spp., and juniper.
Other forbs include: desert holly, blanket flower, threadleaf groundsel, cudweed, and mullin.

**Plant Growth Curves**

**Growth Curve ID** **4604NM**

**Growth Curve Name**: **HCPC**

**Growth Curve Description**: **Mixed mid and tall grassland with scattered shrubs.**

| Jan. | Feb. | March | April | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0 | 3 | 5 | 10 | 10 | 25 | 30 | 12 | 5 | 0 | 0 |

**Plant Community Name**: Historic Climax Plant Community (higher elevations)

**Plant Community Sequence Number**: 2

**Plant Community Narrative**: Same as above **Narrative Label**: HCPC

**Ground Cover and Structure: presently being revised.**

**Plant Community Annual Production (by plant type)**: Higher elevations

**Annual Production (lbs/ac)**

| Plant Type | Low | RV | High |
|---|---|---|---|
| **Grass/Grasslike** | 1,560 | 2,340 | 3,120 |
| **Forb** | 60 | 90 | 120 |
| **Shrub/Vine** | 160 | 240 | 320 |
| **Tree** | | | |
| **Lichen** | | | |
| **Moss** | | | |
| **Microbiotic Crusts** | | | |
| **Total** | 2,000 | 3,000 | 4,000 |

**Plant Community Composition and Group Annual Production**:

**Plant Type - Grass/Grasslike**

| Group Number | Scientific Plant Symbol | Common Name | Species Annual Production | Group Annual Production |
|---|---|---|---|---|
| 1 | BOGR2 | Blue Grama | 150 – 1050 | 150 – 1050 |
| 2 | BOCU | Sideoats Grama | 300 – 600 | 300 – 600 |
| 3 | PLMU3 | Tobosa | 600 – 900 | 600 – 900 |
| 4 | PASM | Western Wheatgrass | 300 – 600 | 300 – 600 |
| 5 | PAOB | Vine-mesquite | 300 – 600 | 300 – 600 |
| 6 | BOSA<br>BOBA3 | Silver Bluestem<br>Cane Bluestem | 150 – 450 | 150 – 450 |
| 7 | SPAI<br>SPWR2 | Alkali Sacaton<br>Giant Sacaton | 300 – 450 | 300 – 450 |
| 8 | ARIST | Threeawn spp. | 90 – 150 | 90 – 150 |
| 9 | SPORO | Dropseed spp. | 90 – 150 | 90 – 150 |
| 10 | PAHA | Hall's Panicum | 150 – 300 | 150 – 300 |
| 11 | SCBR2<br>MURI | Burrograss<br>Mat Muhly | 90 – 150 | 90 – 150 |
| 12 | 2GRAM | Other Grasses | 90 – 150 | 90 - 150 |

**Plant Type - Forb**

| Group Number | Scientific Plant Symbol | Common Name | Species Annual Production | Group Annual Production |
|---|---|---|---|---|
| 13 | ERIOG | Wildbuckwheat | 30 – 60 | 30 – 60 |
| 14 | ARTEM | Sagewort | 30 – 90 | 30 – 90 |
| 15 | VEPO4 | Verbena | 30 – 60 | 30 – 60 |
| 16 | 2FORB | Other Forbs | 30 – 90 | 30 - 90 |

**Plant Type – Tree/Shrub/Vine**

| Group Number | Scientific Plant Symbol | Common Name | Species Annual Production | Group Annual Production |
|---|---|---|---|---|
| 17 | ATCA2 | Fourwing Saltbush | 90 – 150 | 90 – 150 |
| 18 | ACGR | Catclaw Acacia | 90 – 150 | 90 – 150 |
| 19 | FAPA | Apacheplume | 150 – 240 | 150 – 240 |
| 20 | YUCCA | Yucca spp. | 90 – 150 | 90 – 150 |
| 21 | 2SD | Other Shrubs | 90 – 150 | 90 – 150 |

**Plant Type - Lichen**

| Group Number | Scientific Plant Symbol | Common Name | Species Annual Production | Group Annual Production |
|---|---|---|---|---|
| | | | | |
| | | | | |

**Plant Type - Moss**

| Group Number | Scientific Plant Symbol | Common Name | Species Annual Production | Group Annual Production |
|---|---|---|---|---|
| | | | | |
| | | | | |

**Plant Type - Microbiotic Crusts**

| Group Number | Scientific Plant Symbol | Common Name | Species Annual Production | Group Annual Production |
|---|---|---|---|---|
| | | | | |
| | | | | |

## Plant Growth Curves

**Growth Curve ID** 4604NM

**Growth Curve Name**: HCPC

**Growth Curve Description**: Mixed mid and tall grassland with scattered shrubs.

| Jan. | Feb. | March | April | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0 | 3 | 5 | 10 | 10 | 25 | 30 | 12 | 5 | 0 | 0 |

# ECOLOGICAL SITE INTERPRETATIONS

**Animal Community**:

Habitat for Wildlife:

This site provides habitat for a resident animal community characterized by pronghorn antelope, plains pocket gopher, badger, blacktailed jackrabbit, meadow lark, sparrow hawk, bullsnake, western diamondback rattlesnake, and ornate box turtle. Coyotes and bobcats use this site to water and hunt. Quail, dove and many other birds use this site to feed and water.

**Hydrology Functions:**

The runoff curve numbers are determined by field investigations using hydrologic cover conditions and hydrologic soil groups.

**Hydrologic Interpretations**

| Soil Series | Hydrologic Group |
|---|---|
| Dev | B |
| Gabaldon | B |
| Pima | C |
| Ruidoso | C |
| Shanta | B |

**Recreational Uses**:

This site offers fair to poor camping, hiking, backpacking, and picnicking. Hunting is good for birds, antelope, and varmints. Trapping for fur-bearing animals is good. During years of abundant spring moisture, wildflowers are numerous with a wide variety of colors. This site provides an oasis type effect in the generally landscape.

**Wood Products**:

This site has no value for wood products.

**Other Products**:

Grazing:

This site provides forage suitable for grazing by all kinds and classes of livestock, except goats, during all seasons of the year. Because of the lack of woody browse, this site is best suited to cattle. If this site is in a deteriorated state, and is being actively invaded by woody plants, goats may be a valuable management tool. If this site is mismanaged, there will be a decrease in plants such as sideoats grama, western wheatgrass, vine-mesquite, tobosa, burrograss, and fourwing saltbush. This site offers a small but important cool-season forage at higher elevations during late winter and early spring. There will be a corresponding increase in threeawns, dropseeds, and mat muhly. Under continued mismanagement, ground cover will decrease. This could lead to severe water erosion that would require extensive structural control. This site will respond well to a planned grazing system that rotates the season of use. Predator control may be necessary during calving season or when grazing with sheep or goats.

**Other Information:**

**Guide to Suggested Initial Stocking Rate Acres per Animal Unit Month**

| **Similarity Index** | **Ac/AUM** |
|---|---|
| 100 - 76 | 1.5 – 3.5 |
| 75 – 51 | 2.5 - 5.0 |
| 50 – 26 | 4.5 – 8.5 |
| 25 – 0 | 8.5+ |

| Plant Part | Code | Species Preference | Code |
|---|---|---|---|
| **Stems** | **S** | **None Selected** | **NS** |
| **Leaves** | **L** | **Preferred** | **P** |
| **Flowers** | **F** | **Desirable** | **D** |
| **Fruits/Seeds** | **F/S** | **Undesirable** | **U** |
| **Entire Plant** | **EP** | **Not Consumed** | **NC** |
| **Underground Parts** | **UP** | **Emergency** | **E** |
| | | **Toxic** | **T** |

**Plant Preference by Animal Kind**:

**Animal Kind**: Livestock
**Animal Type**: Cattle

| Common Name | Scientific Name | Plant Part | Forage Preferences | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | J | F | M | A | M | J | J | A | S | O | N | D |
| Sideoats Grama | Bouteloua curtipendula | EP | P | P | P | P | P | P | P | P | P | P | P | P |
| Western Wheatgrass | Pascopyrum smithii | EP | D | D | P | P | P | D | D | D | D | D | D | D |
| Vine-mesquite | Panicum obtusum | EP | D | D | D | D | D | D | D | D | D | D | D | D |
| Hall's Panicum | Panicum hallii | EP | D | D | D | D | P | P | P | P | D | D | D | D |
| Fourwing Saltbush | Atriplex canescens | L/S | P | P | P | P | P | D | D | D | D | D | D | P |
| Blue Grama | Bouteloua gracilis | EP | D | D | D | D | P | P | P | P | P | D | D | D |

**Animal Kind**: Livestock
**Animal Type**: Sheep

| Common Name | Scientific Name | Plant Part | Forage Preferences | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | J | F | M | A | M | J | J | A | S | O | N | D |
| Blue Grama | Bouteloua gracilis | EP | D | D | D | D | P | P | P | P | P | D | D | D |
| Sideoats Grama | Bouteloua curtipendula | EP | P | P | P | P | P | P | P | P | P | P | P | P |
| Western Wheatgrass | Pascopyrum smithii | EP | U | U | D | D | D | D | D | D | D | D | D | U |
| Vine-mesquite | Panicum obtusum | EP | D | D | D | D | D | D | D | D | D | D | D | D |

**Animal Kind**: Wildlife
**Animal Type**: Antelope

| Common Name | Scientific Name | Plant Part | Forage Preferences | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | J | F | M | A | M | J | J | A | S | O | N | D |
| Western Wheatgrass | Pascopyrum smithii | EP | U | U | D | D | D | U | U | U | U | U | U | U |
| Fourwing Saltbush | Atriplex canescens | L/S | D | D | D | D | D | D | D | D | D | D | D | D |

## SUPPORTING INFORMATION

**Associated sites**:

| Site Name | Site ID | Site Narrative |
|---|---|---|
| | | |

**Similar sites**:

| Site Name | Site ID | Site Narrative |
|---|---|---|
| | | |

**State Correlation**:

**This site has been correlated with the following sites**: _____

**Inventory Data References**:

| Data Source | # of Records | Sample Period | State | County |
|---|---|---|---|---|
| | | | | |

**Type Locality**:

**State**: **New Mexico**

**County**: **Chavez, Eddy, Lincoln. Otero**

**Latitude**: _____

**Longitude**: _____

**Township**: _____

**Range**: _____

**Section**: _____

**Is the type locality sensitive?** **Yes** ☐ **No** ☐

**General Legal Description**: _____

| **Relationship to Other Established Classifications**: |
|---|
| |

**Other References:**

Data collection for this site was done in conjunction with the progressive soil surveys within the Pecos-Canadian Plains and Valleys 70 Major Land Resource Area of New Mexico. This site has been mapped and correlated with soils in the following soil surveys: Otero, Eddy, Chaves, Lincoln

| **Characteristic Soils Are:** | |
|---|---|
| Dev | Gabaldon |
| Pima | Shanta |
| **Other Soils included are:** | |
| | |

**Site Description Approval:**

| **Author** | **Date** | **Approval** | **Date** |
|---|---|---|---|
| Don Sylvester | 02/02/82 | Donald H. Fulton | 03/03/82 |

**Site Description Revision:**

| **Author** | **Date** | **Approval** | **Date** |
|---|---|---|---|
| Elizabeth Wright | 07/10/02 | George Chavez | 12/17/02 |